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Editorial Comment

TENTATIVE PROGRAM FOR COLLEGE MEETING ANNOUNCED

Have you made your reservations for the meeting of the American College of Chest Physicians? If you have not already written for your hotel accommodations, we urge that you do so without further delay. The Fifth Annual Meeting of the American College of Chest Physicians will be held this year at the Chase Hotel, St. Louis, Missouri, May 13-14th.

The Scientific Program Committee announces the following speakers for the afternoon of Sunday, May 14th:

1. *"Bronchiogenic Carcinoma"*
   Evarts A. Graham, M.D., F.A.C.S., Professor of Surgery and Chief of Department of Surgery, Washington University, St. Louis, Missouri.
2. *"The Use and Abuse of Artificial Pneumothorax"*
   Louis Mark, M.D., F.A.C.P., Medical Director, Rocky Glen Sanatorium, Columbus, Ohio.
3. *"Further Experience in Intrapleural Pneumolysis"*
   Ralph C. Matson, M.D., F.A.C.P., F.A.C.S., Professor of Thoracic Surgery, University of Oregon, and Medical Director of the Portland Open Air Sanatorium, Portland, Oregon.
4. *"Body Section Radiography, with Especial Reference to the Control of Collapse Therapy"*
   Warren C. Breidenbach, M.D., F.A.C.P., Medical Director, Stillwater Sanatorium, Dayton, Ohio.

The completed program, together with the names of the physicians who will discuss these papers, will be announced in a later issue of this journal.

Committee on Scientific Programs
Fifth Annual Meeting of the
American College of Chest Physicians
H. I. Spector, M.D., *Chairman*, St. Louis, Mo.
Wm. W. Buckingham, M.D., Kansas City, Mo.
Elmer E. Glenn, M.D., Springfield, Mo.
Lawrence D. Schlenker, M.D., St. Louis, Mo.

R. B. H. Jr.

HEALTH COMMISSIONER OF ST. LOUIS WILL SPEAK AT COLLEGE MEETING

Dr. Jos. F. Bredeck, Health Commissioner of St. Louis, will be the guest speaker at the Fifth Annual Luncheon Meeting of the American College of Chest Physicians to be held at the Chase Hotel. St. Louis, on May 14th. Dr. Bredeck will speak on the very timely subject of "Controlling Pneumonia in St. Louis." St. Louis has, through its Department of Health, conducted an active campaign for the control of pneumonia, and Dr. Bredeck's

paper on this topic should prove most interesting. For further information on the meeting, watch for the future issues of Diseases of the Chest. R. B. H. Jr.

COLLEGE WILL SHOW EXHIBIT IN SCIENTIFIC SECTION OF A. M. A. MEETING

Dr. H. I. Spector, St. Louis, Missouri, Chairman of the Committee on Scientific Programs of the American College of Chest Physicians is preparing an exhibit which will be shown in the Section on Scientific Exhibits of the American Medical Association Meeting at St. Louis, May 15-20th.

The exhibit of the College for this year will be entitled, "*Differential Diagnosis of Pleurisy With Effusion.*" The exhibit will consist of a series of some one hundred roentgenograms of the chest, accompanied by a brief history of each case and with autopsy findings in some cases. They will illustrate about twenty different types of underlying pathologic lesions of the chest causing the effusion. The exhibit will attempt to demonstrate that a diagnosis of pleurisy with effusion is an incomplete diagnosis unless the underlying pathologic lesion is recognized and included in the diagnosis. R. B. H. Jr.

PREVENTORIA

Dr. Jay Arthur Myers, one of the Greatest Anti-Tuberculosis Crusaders, in his paper, *Treatment, Prognosis, and Prevention of First Infection Type of Tuberculosis,* (J. Lancet, Minn., Jan. 1, 1936), discusses Calmette's work with B.C.G. He states, "Without sufficient knowledge of the potentialities, Calmette and his collaborators started a huge experiment, that is, they introduced B. C. G. into the bodies of large numbers of infants and children. This experiment is now in progress, but, unfortunately, it will require at least two more decades before one can even begin to draw conclusions concerning the ultimate result of the introduction of a virulent living tubercle bacilli into the human body."

We heartily agree with Doctor Myers' conservatism, and wish that he could extend that conservatism to the conclusions he draws from his Lymanhurst Studies. We believe that it is unwise to draw conclusions detrimental to the work of the properly conducted Preventorium until after those same two or more decades of follow-up of Preventorium Children is observed.

The fact that the children who have had and have not had preventorium treatment all appear to be alike during the period between childhood and adult tuberculosis, is no indication that the adult course will be the same. Furthermore, there has been no satisfactory system of controls, in that the amount of original infection in the individual cannot be determined by any known means. It is probable that the child with the greatest tuberculosis infection load will, on the average, be more likely to evince symptoms and, therefore, be more likely to receive parental consent to preventorium treatment.

Uncritical criticism of the Preventorium is doing harm. F. W. B.

BEDS FOR THE TUBERCULOUS

In spite of the fact that the death rate from tuberculosis is being reduced annually, there is greater demand for tuberculosis beds. It is a well-known fact that in those states and communities whose bed capacity equals one or more per annual death, the reduction in death rate is most marked. While in the communities where the number of beds is less than one, there has been little reduction in the death rate. When a study of the reduction in the death rate is thorough, one finds that the reduction is mainly among those whose ages are from 1 to 15 years, and those beyond 45.

Tuberculosis is still the greatest cause of death between the ages of 15 and 45. Persons of these ages are most likely to avail themselves of tuberculosis beds; and when one considers this age group and compares it with the number of beds available, one is impressed with the marked shortage even at the present time.

Many authorities have come to believe that if we are to make further progress in the reduction of the death rate, the ratio of two beds per death, instead of one should be the minimum. In many communities, the waiting lists are even large where there are two beds per death.

In those states and communities where there is now less than one bed per death, the condition can only be improved by the medical profession being aroused to the point where it will demand legislation to meet this emergency. There is no question but what the

greatest handicap in the reduction of the death rate and eventual eradication of tuberculosis, is a shortage of hospital beds. Any attempt to control the dissemination of tuberculosis must prove ineffective so long as the unhospitalized patients continue to spread the disease in a community.

There are certain states and counties which are not using beds that are available in private sanatoria and hospitals, although their state and public sanatoria all have large waiting lists, while in other states, all available beds are used, whether private or public. Besides the fact that there is a shortage of public beds, there is a marked lethargy on the part of the medical profession and the public in certain states toward the tuberculosis control problem. Where such a lethargy exists, the Fellows of the American College of Chest Physicians can do a great service by enlisting the interest of the profession in bringing about tuberculosis control legislation. C. M. H.

THE FLUOROSCOPE At the present time it is essential, if not imperative, that every doctor who purposes to do creditable chest work, have a fluoroscope in his office. The x-ray films may be made and developed in some other place that is conveniently near; but the fluoroscope should be a part and parcel of the office equipment; and its use a routine procedure in the office examination.

After the installation cost of the fluoroscope there is little or no maintenance expense, and it is always available at a moment's notice. With practice, considerable proficiency may be acquired in making the fluoroscopic examination, and an extraordinary amount of lung detail can be seen. The lighting up of the apices after cough is an important observation as the failure to do so is often indicative of apical disease. The movements of the heart, diaphragm and great vessels are ideally studied under the fluoroscope. Also, the shifting of fluid levels are best observed this way. The fluoroscope in conjunction with the Mantoux test affords a most reliable method for screening out subjects in case finding surveys.

Some emphasis must be placed on the proper preparation of the eyes before engaging in making a fluoroscopic examination. If this is neglected, then a poor or mediocre examination follows; and at times becomes an empty gesture. The eyes must be thoroughly accommodated and this takes several minutes or longer in the dark room. On cloudy days, proper accommodation is more quickly obtained than on bright sunny days. Wearing goggles or dark glasses will considerably shorten the time necessary to remain in the dark room.

To repeat, if creditable chest work is to be done; then it demands the routine and the proper use of the fluoroscope. C. H. H.

TUBERCULOSIS AND THE LAW Much progress has been made in securing tuberculosis legislation. Every state now has on its statute books, laws relating to tuberculosis. In a few states, all phases of the tuberculosis problem are covered by some form of legislation, but in many states, the laws on this subject are still meager.

Legislative activities along these lines will be required for many years, not only in order to obtain new laws for the *control* of tuberculosis where none have existed, but to change or amend old laws so that they will conform to scientific and sociological advancement.

Some states are handicapped because of constitutional limitation. These states will necessarily be the last to provide proper tuberculosis control laws. The reason for this is the slow process of constitutional amendments which will have to be voted by the people, before their legislature can pass laws providing more money for tuberculosis beds, maintenance of same, case finding, field work, insurance against wage loss during sickness, rehabilitation, etc.

Here again, the Fellows of the American College of Chest Physicians, can take the lead and bring about the necessary changes by working through the medical profession in their states. The state medical association in any state can convince the proper authorities on any public health problem.

The college has much to do if tuberculosis control is to be accomplished in this country by studying and instituting the Pennsylvania Plan, and making it conform to the problems which exist in any state. C. M. H.

Pleurisy With Effusion

RUFUS A. SCHNEIDERS, M.D.*
San Diego, California

THIS paper does not purport to be a treatise on the subject of pleurisy. It is my intention only to call attention to the more salient points in the diagnosis and management of that stage of the disease known as pleurisy with effusion. Its importance as a symptom of more serious and underlying pathology and the relative frequency with which it is encountered by the practitioner seem to me to make it worthy of discussion.

Pleurisy has been variously classified according to etiology, anatomy, etc., but no one of these classifications is entirely satisfactory. A standard medical dictionary lists 35 different types of the disease. For our purpose we need consider only the three major general types, (1) fibrinous (dry) pleurisy; (2) serous or serofibrinous pleurisy (pleurisy with effusion); and (3) purulent pleurisy (empyema); all of which may be considered as various stages of the same process. The onset may be so sudden, however, that the first and even the second stages may be unrecognized. Pleurisy with effusion represents the second stage in the development of the disease and is, perhaps, the most important from the standpoint of its present and future significance to the patient.

The classical subjective and objective physical signs and symptoms of pleurisy with effusion are familiar to us all. The past and present history of the patient is also of great value. However, even with these definite signs to guide us, we sometimes find ourselves in error. An effusion of 250 cubic centimeters of fluid may very easily escape detection by physical examination, for if the chest is free of adhesions the fluid usually occupies the inferior posterior portion of the chest and as a result influences very little the lower limit of pulmonary resonance. In every case a roentgenological study of the chest should be made. The final proof of the existence of an effusion is, of course, the aspiration of some of the fluid.

Aspiration should be done in all suspected cases; if the first attempt is unsuccessful, repeated attempts should be made in other locations with larger needles. The procedure subjects the patient to practically no danger or discomfort. Occasionally, a so-called blocked pleurisy is encountered as in cases of splenization of the lung from recent acute pleurisy and in cases of sclerosis of the mediastinal and diaphragmatic costal walls in chronic pleurisy. In this type of pleurisy only a few cubic centimeters of fluid can be aspirated because of the rigidity of the walls of the pocket. In pleurisies called "inevacuable without entrance of air into the pleural space," the fluid can be easily evacuated by the two-needle method of aspiration, that is, by inserting one needle several interspaces above the regular aspirating needle so that air is permitted to enter the pleural space; a free flow of the fluid will result.

When the presence of an effusion has been established, the causative factor must be determined. This is a very vital point in the management of the condition because to a certain extent the treatment depends upon the cause. We all have a tendency to treat the symptoms and leave the underlying offender free to go its own way. Then we wonder why our efforts are in vain.

Tuberculosis is the most frequent causative factor; some authorities state that as high as 90 per cent of the pleural effusions are tuberculous in nature. Therefore, no matter whether the onset be insidious or sudden, tuberculosis should be suspected first as the etiological agent. The remaining 10 per cent may be secondary to a number of different conditions and these must be ruled in or out. The point I wish to emphasize is that a pain anywhere in the chest should be thoroughly investigated. It may be only muscular in origin or it may be the forerunner of serious cardiac, lung, or other disease. Our investigation as to the cause of it should not cease with the subsidence of the pain.

The character of the aspirated fluid—serofibrinous, hemorrhagic or purulent—will be apparent upon aspiration. A careful com-

* Rees-Stealy Clinic.

plete history and physical examination will often give us a clue as to the possible causative factor, as in cases of heart disease, rheumatic fever, etc., and routine laboratory tests such as a blood count, urinalysis, Wassermann test, Widal test, etc., may establish or rule out an effusion caused by nephritis, syphilis, typhoid fever, etc. The presence of an hydatid cyst is frequently revealed on the roentgenogram. In cases of malignancy in which hemorrhagic fluid is present, the malignant cells may often be found in a frozen section of the centrifuged material of the aspirated fluid. A tuberculin test should, of course, be made. A negative reaction is of considerable value in that it helps to rule out tuberculosis as the causative factor; a positive reaction points to the possibility of a tuberculous origin, but is not conclusive evidence of it. Direct stained smears are of value in some cases of tuberculous effusion, but even on these the tubercle bacillus is demonstrated only in about 2 per cent of all tuberculous cases. Cytodiagnosis, which is based on the leucocyte count, has attracted much attention in the past but has proved to be of little value. Inoculation of guinea pigs with the aspirated fluid reveals the presence of tuberculosis in from 62 to over 85 per cent of the tuberculous cases. This is a slow method of diagnosis, but it is the most accurate method we have and, in my opinion, is most important because of the importance of tuberculosis as the etiological agent.

It should be emphasized that whenever the etiology of a pleural effusion remains obscure the patient should be given the benefit of the opinion of a competent lung specialist.

The literature and the various text-books reveal a diversity of opinion regarding the treatment of pleurisy with effusion. It is wise to assume, unless it can be definitely disproved, that a patient with a pleural effusion which has developed spontaneously, is suffering from active tuberculosis of the lungs, pleura, or neighboring lymph glands.

Several months may elapse before the tuberculous lesion can be demonstrated. Therefore, as long as fever is present, the patient should be given the benefit of bed rest, plenty of fresh air, a high caloric, easily-digested diet, and a long period of observation. Symptomatic treatment should be instituted so that he may be kept as comfortable as possible. Wet and dry cupping, too-tight strapping or binding of the chest to relieve pain, blistering, etc., are to be condemned. Counter-irritation by means of mild poultices and physical therapeutic lights sometimes seems to relieve the pain. Saline purges and moderate restriction of fluids by mouth may aid somewhat in getting rid of excessive fluid, but it is doubtful whether intravenous injections of calcium chloride are of value.

A difference of opinion exists as to the time of aspiration of pleural effusions and the amount of fluid to be aspirated. The majority of phthisiologists believe that in a case of tuberculous serofibrinous pleurisy, which is the type of effusion most frequently encountered, aspiration should be done as early and as completely as possible and that it should be repeated as often as is necessary to keep the chest practically free of fluid. Of course, in cases of massive effusion, it is best not to remove over 1000 cubic centimeters of fluid on the first day because of the possibility of shock, etc. The remainder of the fluid, or portions of it, may be aspirated on the following days.

A discussion of the many techniques and types of apparatus for aspiration is not necessary here. It is sufficient to say that in cases of large effusion without adhesions it is usually best to insert the needle in the 7th or 8th interspace in the posterior axillary line or in the 5th or 6th interspace in the midaxillary line. The point of insertion of the needle or trocar must of course be chosen to fit each individual case.

It is very important that part of the aspirated fluid be replaced by air. This is especially necessary in cases of a tuberculous nature in order to prevent the formation of adhesions. If there is no air replacement, adhesions form very quickly and make it impossible to obtain pneumothorax collapse for the control of the tuberculous disease which, after aspiration of fluid, is revealed only too frequently on the recheck x-ray film.

Air replacement also makes possible the detection of tumors, aneurysms, etc., since by placing the patient in various positions, roentgenograms may be taken with the fluid at different levels.

Finally, air replacement in cases of aspira-

tion of large amounts of fluid prevents a too sudden shifting of the organs, thereby preventing shock and discomfort, which might otherwise ensue.

In conclusion, the following points should be emphasized:

1. Pleurisy, regardless of the type or the amount of disability it causes, is a serious condition which very frequently is the forerunner of grave and prolonged disease. Consequently, its etiology should be definitely determined. If there is any doubt on this point, consultation with a specialist in diseases of the chest should be requested.

2. Guinea pig inoculation tests should be carried out in all instances in which the etiology remains obscure and especially in those patients in whom a clear serofibrinous fluid has occurred in an apparently spontaneous manner.

3. Part of the aspirated fluid should be replaced with air in all cases until the etiology has been definitely established.

Interpreting Symptoms and Diagnosis of Tuberculosis to the Everyday Citizen*

H. I. SPECTOR, M.D., F.A.C.P.**
St. Louis, Missouri

IN ORDER to understand the viewpoints expressed in this paper, it will be necessary for me to define what we mean by the everyday citizen. The everyday citizen is to be found, first, in the home; second, in industry; third, in public places; fourth, on the streets. The everyday citizen may be looked for in all walks of life—among the laborers and the manufacturers, the bankers and the hobos, the housewives and the clubwomen, the maids and the college girls, the professors and their students, the lawyers and their clients, and the physicians and their patients.

The everyday citizen must be vitally concerned with tuberculosis and its control, because tuberculosis may affect him directly or indirectly. For instance—he may, himself, be suffering from the disease; he may be a contact of one suffering from tuberculosis in the home; he may have friends with tuberculosis; or he may be indirectly concerned through the medium of taxes for maintaining the sanatoria, clinics, public health nurses, etc.

In other words, interpreting tuberculosis to the everyday citizen simply means interpreting tuberculosis to three different groups in the community, namely, the everyday citizen, who thinks that tuberculosis does not concern him; the patients with tuberculosis; and the immediate contacts of those patients.

I shall discuss the subject from the viewpoints of these three groups.

We are all familiar with the mistaken ideas that the layman holds regarding tuberculosis. It is important to interpret tuberculosis to him scientifically, clearly and in a popular way. We must explain to him that tuberculosis is not inherited, that touching a person who has tuberculosis does not transmit the disease to the one who doesn't have it, that not everyone who coughs has tuberculosis, that a positive tuberculin test does not mean active tuberculosis, etc.

For the purpose of protecting the newly diagnosed tuberculous individual from the results of misunderstanding, usually based on either inherited prejudicial ideas or ignorance of the facts, we must impress the everyday citizen with the fact that, while tuberculosis is an infectious disease, it is not infectious in the same sense that Measles, Scarlet Fever or Smallpox are. Above all, we must avoid the development of phthisio-phobia among the everyday citizens.

Unquestionably, popular lectures to the laymen, such as have been recently tried out in the State of Kansas, through the efforts of

* An address delivered at the Mississippi Valley Conference on Tuberculosis, September 23, 1938, St. Louis, Mo.

** From the Chest Clinics of the St. Louis Health Division and the Chest Clinic of the Desloge Hospital (a part of the St. Louis University Group of Hospitals).

the Kansas State Tuberculosis Society, will be of great aid in overcoming these inherited misunderstandings. To such audiences we must bring the message of tuberculosis from the factual angle and not from the exaggerated or phobic one. It must be brought in a form that the ordinary layman can consume; it must be impressive enough to cause him to take notice of the situation in his own community and in his own place of employment. We must acquaint him with the fact that no one is immune from developing the disease, that tuberculosis is a great imitator and can at times assert itself in the lungs in such a way that the patient does not know anything about the impending tragedy that faces him. The message must be informative, accurate, devoid of exaggeration, helpful and stimulating enough to convince the listener that he ought to take stock in his own family.

It makes very little difference whether we believe in the reinfection *theory* from within or from without; the fact remains that active tuberculosis is an infectious disease which does occur at all ages and, frequently, in more than one member of the family.

From the viewpoint of public health control, we are primarily interested in discovering the cases early in the disease and instituting measures to avoid spreading of the disease. We must, therefore, impress upon the everyday citizen that the control of tuberculosis is everyone's job, that a diagnosis of tuberculosis in a community may concern him directly or indirectly and that for this reason the everyday citizen must provide facilities for treatment and hospitalization of the cases with active disease, not only for his own protection, but because of humanitarian reasons.

In interpreting the symptoms and diagnosis to the layman we must impress upon him that no one is exempt from developing the disease, that his friends, relatives and immediate family are as prone to contract and develop tuberculosis as hundreds of others have. He must be informed as to the urgency of early diagnosis and the significance of neglect in this regard.

In interpreting symptoms and diagnosis to the patient we have five objectives: First, to convince him of the diagnosis; second, to encourage him to take immediate treatment; third, to impress him, for the sake of his family, with the infectious nature of tuberculosis; fourth, to solicit his help in urging the examination of his contacts; and fifth, to encourage him, as much as possible, from the prognostic angle.

Our first duty is to tell the patient, as well as his family, the truth as to the diagnosis. To my knowledge no patient likes deceitfulness as far as diagnosis is concerned. He prefers to know the truth about his disease rather than to be misled by some meaningless diagnosis. Let me offer you proof in this regard through the testimony of 1238 patients now in the sanatoria of Missouri, as gathered recently through the medium of a questionnaire.

The results of this study can be seen in the following table:

FIGURES TABULATED FROM ANSWERS OF 1,238 PATIENTS

In Municipal, City and State Tuberculosis Sanatoria

1. Do you think that the doctor should tell or should not tell the patient that he has Tuberculosis?

Should:	1184	95.6%
Should not:	24	2.0
Depends on patient:	29	2.3
Don't know:	1	.1
	1238	

2. Would you much rather not know that you have tuberculosis?

Rather know:	1107	89.4%
Rather not know:	130	10.5
Not answered:	1	.1
	1238	

3. Do you think that by not knowing the nature of your disease you would improve faster?

No:	1059	85.5%
Yes:	145	11.7
Depends on patient:	7	.6
Don't know:	27	2.2
	1238	

4. Were you much upset when you found out you had tuberculosis?

Yes:	640	51.7%
No:	593	47.9
Not answered:	5	.4
	1238	

5. Did learning the name of your disease make your condition worse?

No:	1106	89.3%
Yes:	119	9.6
Don't know:	13	1.1
	1238	

6. Did your first doctor recognize the nature of your disease?

Yes:	726	58.6%
No:	475	38.4
Don't know:	37	3.0
	1238	

You will see from these answers that the patients prefer the truth and are not made worse by knowing the truth.

Of course, the diagnosis must be told them in a gentle way, in a sympathetic way and in an encouraging way. You must dispel from their minds some of the public notions regarding tuberculosis. They must be told that tuberculosis is not an inherited disease, that blood spitting does not necessarily mean that the disease is in the last stages. For the protection of the other members of the family, they must be further impressed with the fact that they have more than a nervous breakdown or a run-down condition or a weak spot in the lung, but that they have tuberculosis which is an infectious and communicable disease; that precautions must be taken not to transmit the disease to the other members of the family, especially the children. They must be convinced of the diagnosis and of the infectiousness of the disease and avoid prolonged intimacy with other members of the family.

In my own practice, I have been in the habit, after explaining the symptoms to the patient, to show him the x-ray film and even the tubercle bacilli that I have found in his sputum under the microscope. These techniques of convincing the patient are always effective, for when the patient sees his own disease he is more likely to accept the diagnosis and its meaning and is less likely to go medical shopping in order to obtain a more pleasant diagnosis. I have yet to see a patient collapse because of learning the true diagnosis. I have, of course, seen tears, I have heard several patients threaten to commit suicide, but I have not yet seen one patient carry out this threat. From my observations, I am of the opinion that patients prefer knowing the truth about their condition and dislike and resent misleading substitutions. It is well for the physician, public health nurse or social worker to remember that the tuberculous patient is generally optimistically inclined. It is for this reason that encouraging words as to the ultimate recovery rapidly neutralize the sad experience of learning of the unpleasant diagnosis of tuberculosis. Encouraging words as to the recovery from tuberculosis should be given freely to the patient concomitant with the diagnosis.

To the family of the patient, we must impress the fact that a tuberculous patient is not an outcast, that only the careless consumptive and the uncooperative one is a menace to the family. We must impress upon them that it is not absolutely necessary to send these patients West in order to get well from tuberculosis, for, as Lawrason Brown once said, "at home or abroad, in the desert or on the ocean, in the lowlands or upon the mountains, patients may do well as they recover anywhere and everywhere, for it matters not *where*, but how they live." We must explain to them the object of treatment—that despite the fact that the patient looks physically well—his lungs are diseased and rest is necessary. We must emphasize to them the fact that a diagnosis of tuberculosis in one member of the family means that there may be other members of the family with the disease and that a routine examination of the whole family is essential for the safety of the family. We must impress upon them the importance of frequent examination of contacts as long as exposure to the active case continues.

It is advisable to explain to contacts the early symptoms of tuberculosis and that occasionally active disease may exist in one's body without impressing symptoms and for this reason a routine examination, a routine tuberculin test and an x-ray film should be taken as frequently as indicated in the particular cases.

The contacts and the everyday citizens in the community should be informed further about the common symptoms of tuberculosis —such as the danger of coughs that hang on,

whether in winter, spring or summer. They should be told that transient hoarseness may signify a beginning tuberculosis of the throat, that frequent pains in the chest may signify a tuberculous pleurisy, that frequent colds may be due to a low grade active tuberculosis, that blood spitting, in most cases, is due to tuberculosis, and that afternoon fever is frequently found in active tuberculosis.

To the everyday citizen who is an official of an appropriating body, or a member of a legislative body, special educational techniques must be employed for obvious reasons. To this type of everyday citizen sentiment does not always appeal. Figures and facts based on annual costs of maintaining a patient in an institution, figures and facts based on the loss to a community because of sickness from tuberculosis are strong arguments for passing legislation for the adequate control of tuberculosis.

To the everyday citizen in industry it is imperative to explain that patients with arrested disease are not a menace to anyone; that such people, because of their handicap, make loyal employees; and that, because of the guarded life that they lead, make more efficient and trustworthy employees.

In the final analysis, interpreting symptoms and diagnosis to the everyday citizen has for its objective a broader and more sympathetic understanding of the obligations on the part of the patient to his immediate family and the community in general, and on the part of the everyday citizen of the community to the patient and his family, so that each can respect and protect the interest of the other.

622-24 University Club Bldg.

A Plan for the Control of Tuberculosis in Rural Communities

JAMES H. McNEILL, M.D.
North Wilkesboro, North Carolina.

WITH THE belief that tuberculosis can be controlled if communities will cooperate in its eradication, if diagnosis is early and if treatment is prompt and adequate, we have evolved a plan which we believe will eventually make the disease much less frequent.

Our plan consists of three phases: namely, (1) Community education, (2) Early diagnosis, and (3) Adequate treatment.

The community education is left largely to our county health office. Every effort is made to get our people to realize that tuberculosis is not a disgraceful or shameful disease, but an unfortunate state which can be controlled and prevented. Here, as in nearly all parts of the country, people frequently try to hide the presence of tuberculosis in the family, as they fear that if such knowledge gets out they will be ineligible for work in factories and other public works.

Education is attempted by several means. For those who want it, literature (published by the United States Public Health Service and by the state) is available. An effort is made to get this literature into the hands of all families in which tuberculosis exists and into the hands of all who come in contact with the disease.

By newspaper articles in the county papers, we try to tell our people what tuberculosis is, and how it can be diagnosed and treated. The community is told of the early symptoms of tuberculosis and it is urged that people in contact with the disease, or people having some of its early signs go to their physician for diagnosis. Our people are assured that, with early diagnosis, much can be done to arrest the progress of the disease and every effort is made to remove from the lay mind the gloomy prognosis that tuberculosis has formerly had. As in the present publicity campaign against syphilis, we are trying to bring the disease out into open daylight.

Nothing, so far, has been done in the way of giving lectures at public meetings, but much has been done by conversation with our patients. These talks follow the lines of the newspaper articles. Again, our patients are told that there is no need to be ashamed of having tuberculosis, but that it is shameful

to spread it to innocent contacts.

Early diagnosis is attempted by three means. First, our practitioners of medicine are made "tuberculosis conscious." They are asked to regard with suspicion all patients who complain of loss of weight, low grade fever, easy fatigueability, or any of the other early signs of tuberculosis. The x-ray is being used much earlier when any symptoms are found. From sad experience we are learning that "Early tuberculosis should be *seen* and not heard," as we have all been startled by x-ray plates showing extensive involvement when no physical signs were present.

Our second means of early diagnosis is the use of the tuberculin test among school children. This work is done by our county health officer and his assistants. It is done systematically in all the schools of the county every year. No effort is made to test all the school children, as it is felt that this would be needless. The health officer makes a routine check-up of all children annually to find gross physical defects such as malnutrition, bad tonsils, deafness, poor vision, etc. Children who are found to be more than 10 per cent under standard weight are tuberculin tested, if the parents will give their consent. As in all communities, there are always a few parents who are non-cooperative—usually from fear of putting the "stigma" and "shame" of tuberculosis on their children. As a whole, little difficulty is encountered along these lines. A second group that is tested consists of known contacts. As tuberculosis is a reportable disease in this state, all tuberculous families are known to the county health office. Members of these families attending school are urged to have the test whether they are under weight or not.

When a child is found to have a positive tuberculin reaction, his family is notified of that fact and they are asked to have him x-rayed and observed by the family physician. Treatment for those found to be tuberculous will be gone into later. X-rays are made by our local hospital, for full price when the patients are able to pay, and at actual cost when they are not. Neither the county nor the state has set aside any funds for paying for these x-rays.

Our third means of early diagnosis consists of the fluoroscopic clinic held in our county seat each summer. This service is rendered by our state sanatorium. One of the sanatorium's physicians, skilled in fluoroscopic diagnosis, is sent to us with a portable fluoroscope. He stays here from one to two weeks, the number of patients to be examined dictating the length of his stay. This clinic costs neither the county nor the patient a cent, but is a part of our state's effort to bring tuberculosis under control.

Prior to the coming of the fluoroscopist, all the doctors in the county are notified of the date of the clinic and are urged to tell patients whom they suspect of having the disease, all contacts, and all who have had tuberculosis, to appear.

Further publicity is given by frequent newspaper announcements of the dates. This publicity is designed to catch those who have no regular family physician. It is surprising how many people will come in without being sent.

All known contacts receive a letter from the county health officer urging them to come in for an annual check-up. In addition to these, all patients resident in our local tuberculosis hut are brought in for a check-up.

All patients, whom the fluoroscope shows to have either definite or suspicious lesions, are referred to our local hospital for chest plates. Here again, there is no financial provision for taking these pictures, so the patient pays according to his ability. Borderline cases found by fluoroscopy are given the tuberculin test and, if cough and sputum are present, the sputum is examined for tubercle bacilli by the State Laboratory of Hygiene.

So far, this plan is exactly that outlined by the state sanatorium for the early diagnosis of the disease. It is in treatment that we differ from most of the rural counties of North Carolina.

At the 1937 fluoroscopic clinic the doctor from the state sanatorium told me that, of the active cases he diagnosed at the clinic, over half would be dead before they could be admitted to the state sanatorium. This was attributed to lack of proper treatment and diet during the time they were on the waiting list for admission, and to the insufficient number of beds available at the state institution.

As the treatment of tuberculosis is more or less standardized, we determined that, as

nearly as possible, we would duplicate that given by our state sanatorium.

Our treatment consists of (1) Isolation of active cases, (2) Absolute rest in bed, (3) Nourishing diet, and (4) Compression therapy, either by pneumothorax or by phrenic nerve operation where indicated and when possible.

Isolation is accomplished, where the patient will cooperate, by having him admitted to a small hospital (12 bed capacity) furnished by the county and located on the county farm. Thus the danger of spread of the infection is minimized. Rest is more easily possible in that the patient is not distracted by the usual home worries.

The hospital itself is small, having only one floor. There is an entrance hall, flanked by two large wards. Behind the entrance hall are the kitchen and living quarters for the two women who attend the patients. Such a hospital is inexpensive to build and equip. As the hospital is located on the County Farm, food supplies are available in abundance and at small cost. No attempt is made to force feeding, but the diet is general and nourishing. Extra vitamins are supplied in the form of tomato juice, orange juice, and cod liver oil.

Pneumothorax is our method of choice in compression therapy. Equipment for this procedure is inexpensive and simple to operate. It is beyond the scope of this paper to go into the indications for the procedure or its technique. Suffice it to say that any good medical man or surgeon can learn the technique and indications by a short visit to his state tuberculosis sanatorium. Where we are unable to get a collapse with pneumothorax, a phrenic nerve crush is done.

Usually, these measures will greatly improve the patient in a few months. At least, they will slow down the progress of the disease to such an extent that he does not die before he can be transferred to the state sanatorium.

Several of our patients have been sent to the state sanatorium for more elaborate therapeutic procedures, such as pneumolyses and thoracoplasty operations and then have been returned to us for continuation of treatment.

Medical attention is rendered these patients by the county health officer, by his family physician or by myself—as the patient chooses.

Conclusion

A plan for early diagnosis and adequate treatment for tuberculous patients in rural communities has been presented. We feel that this is an effective, inexpensive plan and one that (if followed) will materially reduce the incidence of tuberculosis.

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CONSULT DIRECTORY SECTION OF JOURNAL

With this issue of *Diseases of the Chest*, we have inaugurated a DIRECTORY SECTION for the listing of accepted sanatoria for the treatment and care of the tuberculous.

You will find this DIRECTORY on page 31 of this issue of your journal. We suggest that physicians who are interested in referring their patients to private sanatoria, investigate the advantages which the management of these sanatoria can offer to private patients.

We also suggest that private sanatoria who are interested in obtaining a listing in this Directory Section of *Diseases of the Chest*, write to the Business Offices of the Journal for complete information concerning this service.

The Treatment of Bronchiectasis

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IN THIS discussion we are concerned with the treatment of patients who have symptoms of bronchiectasis, and who, upon lung mapping, show dilatations of the bronchial tree. Cough and expectoration are the universal symptoms and it is for relief of these that the bronchiectatic patient most often presents himself. Other symptoms, such as hemoptysis, fever, chills, sweats, fetor, emaciation, dyspnea, and chest pain, often occur and may necessitate special consideration. Joint pain and skin eruptions are not unusual symptoms and frequently disappear when adequate drainage is established. Gastro-intestinal disturbances are less frequently encountered, but when present indicate a severe toxemia and suggest an amyloid disease. These symptoms, too, often improve and sometimes disappear with adequate drainage.

Upper respiratory infections are encountered so often in association with bronchiectasis that a number of authors feel there is a direct relationship between the two conditions. Many theories such as direct extension through the respiratory tract, infection through the blood or lymphatic stream, and aspiration of infected material have been advanced in explanation of this. As yet there is no agreement of opinion as to which of the conditions is primary and which is secondary, or whether both are manifestations of the same disease in different locations. Although it is generally conceded that treatment of the infection in the nasal accessory sinuses will not cure bronchiectasis, it is our opinion that possible sinus infection should be suspected in every patient having bronchiectasis and when present should be adequately treated. Because of this, it is our practice to routinely x-ray the sinuses of all of these patients. Since the infection in the sinuses not infrequently produces no localizing symptoms, this precaution has often enabled us to diagnose unsuspected sinus disease and, by having this condition treated, make possible the relief of both conditions simultaneously.

It is agreed that a cure of bronchiectasis can only be effected through surgery and, unfortunately, surgical removal of the diseased tissue is applicable in only a relatively small percentage of those afflicted. Pneumotomy was probably the first surgical procedure employed in the treatment of bronchiectasis, but since simple incision and drainage of a dilated bronchus is insufficient to afford much relief in a disease characterized by multiple pockets, this method of treatment has been largely discarded. Treatment by cautery pneumectomy was described by Sauerbruch in 1920 and by Graham in 1923. It is utilized rather extensively by the latter in cases he considers unsuitable for other forms of surgery. Graham in 1921 also recommended intrathoracic compression with gauze packs, but this procedure was found to have only a limited applicability. Thoracoplasty was utilized by a number of surgeons in the treatment of bronchiectasis, and in 1924 Hedblom, one of the strongest advocates of this procedure, reviewed the literature on thoracoplasty in the treatment of bronchiectasis and summarized the results. It is rarely mentioned in current literature. Phrenicectomy was also used and symptomatic improvement was reported in a number of instances. It has since been abandoned because of the temporary nature of the improvement and the possible harm resulting from interference with drainage. Oleothorax and plumbage have been tried, but have not proved successful. Pneumothorax has been advocated in the treatment of bronchiectasis since 1903, and in 1923 Tillman collected sixty-five cases reported in the literature. Relatively few reports have appeared since. It is generally agreed that pneumothorax can do but very little good in the average case, and may be harmful. We have utilized pneumothorax in a few instances to control massive hemorrhage and have found it useful for this purpose, but we have not observed any curative effect on the bronchiectasis.

Lobectomy and pneumonectomy have become increasingly more popular in recent years, and although the operative technique has been constantly improved it remains, even in the hands of skilled surgeons, a serious sur-

gical operation. The perfection of lobectomy and pneumonectomy has been largely responsible for the success attributed to surgery in the treatment of bronchiectasis since excision of the diseased area is the only hope of permanent cure thus far developed. It is, therefore, replacing other surgical methods such as pneumotomy, cautery excision and collapse therapy. It has many limitations, but its indications are chiefly limited by the extent of the disease and the ability of the patient to withstand a serious operation. Best results are obtained in young individuals showing little or no evidence of toxemia, and found by lung mapping to have bronchiectasis confined to one lobe. Alexander states that lobectomy or pneumonectomy should never be performed for the cure of bronchiectasis without first mapping the entire bronchial tree. The mortality from lobectomy in a select group of young individuals without toxic symptoms may not exceed 3 or 4 per cent. Churchill reports his last thirty successive lobectomies for bronchiectasis and cystic disease completed without mortality. This is one operation that is usually better withstood by children, as contrasted with their reaction to abdominal operations. According to Romanis and Sellors, patients having moderate toxemia carry an operative mortality of about 17 per cent from lobectomy. In the more toxic group the mortality from this operation may be 35 to 40 per cent. They also feel that a surgeon exercising fair judgment in undertaking a number of operations on patients in both the latter groups will have a probable mortality rate of fifteen or more per cent. In addition to shock, they enumerate as other possible risks emphysema, spreading pneumonia, bronchial fistula, atelectasis, and gangrene. The late results from lobectomy and pneumonectomy are not available since too few cases have been followed over a sufficiently long period of time, but available data indicate that favorable results will be permanent.

The non-surgical treatment of bronchiectasis includes such measures as rest, or the so-called sanatorium regime, diet, climate, heliotherapy, intravenous therapy, vaccine therapy, inhalations, bronchial lavage, roentgen therapy, postural drainage, bronchoscopic drainage, and direct intrabronchial application of drugs.

Rest often affords temporary symptomatic relief, but seldom lasting improvement. Symptoms usually return upon resuming exercise.

All forms of diet have been employed, including high caloric, high vitamin, and allergic diets. Each of these may have a place in the treatment of certain individuals with bronchiectasis, but are not important in the general management of the disease.

Change of climate may improve the condition of some patients, but usually is not worth the cost entailed. Beyond the avoidance of irritant gases and extremes of climate there is little evidence to indicate that a change of climate is of more than temporary benefit.

The use of sun-light, quartz light and other lights has no particular value in treatment.

The intravenous administration of salvarsan and other drugs may be helpful in combination with other forms of treatment. Its usefulness is limited to a few of the cases with fusiform spirochetal infection.

A few cases of symptomatic improvement are recorded from the use of vaccines, but it is generally agreed that these have no particular value in the treatment of bronchiectasis.

The use of steam inhalations containing certain drugs such as eucalyptol, guiacol, and benzoin, formerly very popular, has been largely discarded.

Bronchial lavage, either through or without the use of the bronchoscope, has given way to bronchoscopic aspiration, postural drainage, and instillations of iodized oil.

Roentgen therapy using large dosage has been tried by a number of investigators and good results have been reported by a few. Berck and Harris report excellent results principally in the reduction of cough and expectoration in all morphological types and degrees of bronchiectasis. It is their opinion that this method of treatment is feasible as the sole treatment for chronic secreting bronchiectasis. Many other investigators have not been impressed by the improvement obtained with roentgen therapy.

Postural drainage is one of the few forms of treatment which has withstood the test of time. It may be made continuous while the patient is on bed rest, or the ambulant

patient may drain at more or less frequent intervals. Some authors advocate drainage hourly, but this is not practical for patients who are employed, either during hours of employment or of sleep. Many patients can drain three or four times daily and remain relatively free of cough and expectoration.

The value of the bronchoscope in the treatment of foreign body bronchiectasis, and certain cases having partial bronchial stenosis is obvious. The foreign body should be removed and bronchial constrictions dilated if possible. It has been proved that bronchoscopic aspiration is the most effective nonsurgical means of emptying the bronchiectatic pockets of their secretions. Many patients are afforded considerable symptomatic relief by repeated bronchoscopic aspirations.

The intrabronchial application of drugs by syringe or spray is not new, since for many years various drugs have been injected into the trachea and bronchi in the treatment of bronchitis and bronchiectasis. At the present time, iodized oil is extensively used in the treatment of these conditions and is relied upon almost solely for accurate diagnosis of bronchiectasis. So far as we know it has no definite bacteriocidal properties and we feel that its apparent beneficial action is probably largely mechanical.

Studies by Jacobaeus, Selander and Westermark on the emptying capacity of the bronchi led them to believe that they could distinguish two phases in expectoration. The first phase, an expression of the emptying capacity of the larger bronchi, and the second phase, corresponding with the emptying of the bronchioles and alveoli. The injection of lipiodol will often hasten the first phase emptying and since the oil is heavier than the sputum may make the evacuation of pus more complete. Ballon and others have shown that lipiodol may remain unchanged in the normal lungs for weeks or months. They observed no lymphatic distension and hence no subsequent infiltration or fibrosis. Some investigators think that the iodine absorption may be an important factor in the influence of iodized oil on bronchiectasis. Others have shown that all inflammatory foci have a high affinity for iodine and store it in abnormally high amounts. Since the distribution of the dilatations of lipiodol remains unchanged following the administration of the oil, it would seem to be most helpful in the less advanced forms of bronchiectasis. Ochsner, Lenk, Haslinger, Sgalitzer, D. H. Ballon and others have noted striking improvement following the therapeutic use of lipiodol. Other investigators report little or no improvement following its use. Our experience leads us to believe that when properly used, iodized oil is helpful in a large percentage of cases suffering from bronchitis and bronchiectasis.

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The Value of Bronchoscopy in Bronchiogenic Carcinoma*

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THERE are two outstanding features of the present status of bronchiogenic carcinoma. Stated briefly, they may be said to sum up the progress which has been made in the past few decades on this disease entity. The first of these is the value derived from a closer cooperation of internist, radiologist, pathologist, and thoracic surgeon; and, the second is the important role played by the bronchoscope in the diagnosis and therapeutic measures applied to this lesion.

Medical literature is well supplied with recent articles on the subject of primary lesions of the lung and bronchi, many of which open the discussion with a comment on the increasing incidence in the past twenty years of bronchiogenic carcinoma; but, whereas intensive studies are in progress on occupational occurrence, sex dominance, and age incidence, most authors reach the conclusion that the increased number of reported cases is due primarily to advances in diagnostic facilities.

Etiology

Chronic irritation offers one of the best explanations for the frequency of bronchiogenic carcinoma. Therefore, influenza epidemics as well as chronic tuberculosis have been suggested as possible contributing factors, but no proof has been found whereby they could be accepted as definitely causative. Furthermore, while opportunities for bronchial irritation are on the increase, it has likewise been impossible to prove any association on an etiologic basis from either clinical or experimental evidence secured up to the present time. Such irritations as tobacco smoke, exhaust gases, tar on roads, and dusty trades have been taken into consideration, with the result that the general concensus of opinion is that occupational significance in the incidence of bronchiogenic carcinoma is virtually nil, and housewives are as apt to develop the lesion as day laborers. Statistics show a predominance of the male over the female in incidence. Age apparently plays little part, since old and young are affected. However, the general rule with carcinoma applies in this instance, and the great majority of cases occur in middle and late middle life. Statistics further bring out two interesting phases: one, that localization is more frequent to the right lung than to the left; and the other, that localization to the inferior lobes is somewhat more frequent than to the superior.

A rapid review of this experimental evidence then strengthens the deduction that by far the greatest reason for the apparent recent increase in carcinoma of the lungs is the development of cooperation between the internist, radiologist, bronchoscopist, clinical pathologist, and thoracic surgeon, whose teamwork may develop the solution of the problem from every standpoint.

Symptoms and Signs

With its rise from comparative obscurity into a position of importance, primary carcinoma of the lung or bronchus has been found to possess interesting clinical and pathologic features, the most disconcerting of which are its frequent insidious onset, the fact that symptoms which might lead to a positive diagnosis often develop late, and added to this, a tendency to mask its presence by simulation of other acute or chronic pulmonary infections. It has become essential, therefore, for clinicians to become conscious of its true prevalence and to be on the alert to discern initiating symptoms which may lead them to suspect its presence. Patients frequently have initial symptoms of acute respiratory infection or pneumonia, besides which the possibility of bronchiogenic carcinoma should always be considered in patients over 30 years of age, with pulmonary

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abscess, in patients who fail to recover from lobar pneumonia, and in patients with persistent cough, chest pain, hemoptysis, and steady weight loss. A survey of the commonest physical findings are weakness progressing to hemiparesis, anorexia, proneness to fatigue, a lag on the affected side, dulness to flatness on percussion, diminished or absent breath sounds, voice sounds, and tactile fremitus, associated with atelectasis or fluid, or both. Pain may be among the early symptoms and is commonly diffuse over the lower chest and epigastrium or in the shoulder and back. Cough, sometimes of many months or even years standing, sputum which is mucoid, either white or frothy, and is rarely purulent unless obstruction and infection occur, dyspnea and streaking or frank hemoptysis are also high in order of frequency. One of the most significant physical signs noted is evidence of bronchial obstruction as revealed by distant breath sounds, which is rarely seen in other pulmonary diseases without involvement of the pleura, and when it is observed without corresponding impairment of the percussion note over the area involved, carcinoma should be suspected at once. There are times when breath sounds are markedly reduced or absent, while the bronchial lumen on bronchoscopic examination does not appear to be greatly narrowed. Distant metastasis may also present the first evidence of primary bronchial carcinoma, but this obviously presents pathologic difficulties in tracing the site of the carcinoma. Metastasis occurs chiefly in the bones, in the brain, in distant and regional nodes, and in the liver, pancreas, pleura, kidneys, adrenals, intestine, thyroid, pericardium, esophagus, lungs, diaphragm, and so on. The above more or less late characteristics are those of obstruction. Certainly the diagnosis should be made before these late signs.

Bronchoscopy

It has become a well established fact that one of the chief factors in the more frequent antemortem recognition of primary malignant growths in the air passages is the more general employment of bronchoscopy in the diagnosis and treatment of chronic pulmonary diseases and the removal of tissue for microscopic examination. Roentgenography is likewise of inestimable value in the early recognition of these lesions, and, whereas it may not be pathognomonic, it at least often leads to a provisional diagnosis, which, of itself, is an initial step toward saving a patient who might otherwise be doomed to death. The ease with which an x-ray is obtained is a point in favor for both patient and physician, as against the prevalent conception of the dangers encountered as well as the possibility of trauma in bronchoscopy. Bronchoscopy, in fact, is not an exceptional, heroic, and dangerous procedure, and, if undertaken with care and skillful manipulation, is no more dangerous than exploratory operations in other regions. This means of visualization not only definitely establishes a positive diagnosis, but the location of the growth is determined and the surgeon is aided thereby in selecting those cases which are thought to be best suited for operation, in addition to obtaining definite evidence regarding the level at which the lobe or lobes may be amputated to reach the upper limits of the tumor. Of course, bronchoscopy may not determine the extent of the lesion and the possibility of malignancy should not be excluded on the basis of a negative bronchoscopy or biopsy, yet its value in the great percentage of cases cannot be denied, for it has been estimated that with the aid of this instrument over 75 per cent of all cases of bronchiogenic carcinoma can be diagnosed correctly. Statistical information further states that those patients upon whom a diagnosis is verified by bronchoscopy, live approximately two and a half times as long as those in whom the tumor has not been visualized, because of early institution of therapy.

X-ray Diagnosis

In the light of present roentgenologic knowledge, it has become possible through a more accurate understanding of the image presented by varying degrees of bronchial stenosis, to diagnose carcinoma of the bronchus in an early stage, despite the fact that carcinoma actually never shows directly in a roentgenogram until in a very advanced stage. This advanced roentgenologic work is being successfully employed locally by Dr. Granger in Charity Hospital. This means of diagnosis is based on studies which have revealed the fact that if the bronchostenosis

is slight, it produces a slight opacity, due to diminished air content and hyperemia, and is localized to an area corresponding to the extent of the stenosed bronchus, which in lateral projection appears wedge-shaped, and is particularly pronounced during inspiration. A more marked stenosis causes a valve action resulting in rarefaction in the part of the lung which corresponds to the extent of the stenosed bronchus, and in lateral projection likewise appears wedge-shaped, with more or less pronounced convex limits. It is more pronounced during expiration. Finally, the practitioners of this advanced roentgenography claim that when the stenosis has caused complete occlusion, there results a massive opacity due to atelectasis and hyperemia, and localized to an area corresponding to the occluded bronchus. It appears wedge-shaped in lateral projection, with concave limits. The surrounding lung tissue is emphysematous. If the stenosis is chronic, bronchial carcinoma should always be suspected, and bronchography undertaken. True carcinoma of the lung or any tumor must grow, however, until it breaks into the bronchus to be diagnosed by bronchoscopy. Once these tumors, whether they be benign or malignant, have grown sufficiently to obstruct a bronchus, collapse of the lung beyond the obstruction occurs, and only by bronchoscopy can this condition be differentiated from dense infiltration by carcinoma. Furthermore, the tumor must have an intrabronchial portion in order that a particle may be removed for biopsy.

Localization

While it has been generally understood that bronchial carcinoma usually has its primary localization in the main stem of the bronchus or in one of its branches of the first order, increased diagnostic facilities are demonstrating that many early bronchial carcinomas are localized to branches of the second or third order, and that it may spread not only peripherally, out into the lung, but also in a central direction following the bronchi so that in the final stage it ends by infiltrating the stem bronchus itself.

The appearance of the tumors visualized bronchoscopically vary from the smallest nodule to a cauliflower mass, completely filling the main bronchus. The majority have an irregular granular surface, somewhat paler than the normal bronchial mucous membrane, and on removal are found to be extremely soft in consistency, and bleed freely. Occasionally they are harder and redder in color.

Bronchoscopy will reveal the presence or absence of tumor formation, although in some cases histologic examination will be necessary to differentiate between a tumor and granulous tissue. It is occasionally difficult to differentiate between the shadow of a mediastinal growth and a pulmonary growth, which is situated close to the hilum. In the former instance, bronchoscopy shows a narrowing of the bronchus from without, usually a scabbard-like flattening, as opposed to the projection of the tumor mass into the lumen, and the mucosa in the stenosed area is normal in appearance on section.

The past few years have encouraged the development of more accurate information on the pathogenesis of this condition, and considerable advance has been made along these lines in the adoption of the classification of these lesions as adeno-alveolar, squamous and "oat cell" carcinoma. Adenocarcinoma develops from columnar epithelium of the bronchus or from the mucous glands; alveolar carcinoma from the alveolar epithelium; and "oat cell" from a specific basal cell; while squamous cell carcinoma depends upon metaplasia from the columnar to the squamous epithelium.

Therapeutic Management

The proper therapeutic management of bronchiogenic carcinoma is an important question. Advances in thoracic surgery have increased the proportion of patients for whom radical removal is possible, but a large number of patients present themselves in too advanced a stage to permit of these measures, and the growths have to be destroyed by less radical measures, or palliation alone is possible. There are two methods of treatment, irradiation and endoscopy with the bronchoscope. It has been advocated in employment of the latter, that the lesion be destroyed by means of an electric cautery or by the implantation of radon seeds. Radon seeds of platinum, gold, or silver may be inserted di-

rectly into the tumor or they may be applied in some form of container, which is left in the bronchus for a given time and then removed. There are definite variations in the technic employed, and only time and future experience will lead to the selection of the most desirable. Some operators insert the seeds directly into the tumor mass, instead of alongside of it in the bronchial lumen. In this way they can be distributed in different parts of the growth and are more likely to remain in position. The seeds become inert after fourteen days, although they are known to migrate, no symptoms have ever been reported as caused by their presence.

The employment of either electrocoagulation or implantation of seeds is apt to open the lumen of a bronchus to such an extent as to relieve at least partially some of the atelectasis that is frequently present, with the result that there is better aeration of the diseased lung with drainage and a decrease in the size of the atelectatic area, as demonstrated by x-ray. It is possible to remove a pedunculated tumor endoscipically with electrocoagulation; but it must be borne in mind that the effectiveness of local application of radon seeds bronchoscopically may be lowered by the inaccessibility of the growth and the relative radioresistance of the cells. The method, however, may be of value when used in conjunction with surgery, especially in those patients in whom a small amount of tumor must be left in the bronchial stump for technical reasons or in those patients in whom there is a local recurrence in the bronchial stump.

Although the study of primary carcinoma of the lung is in a stage of rapid and varied development, some phases of which are still baffling, a brief review of cases taken at random will not only substantiate the progress, made diagnostically, pathologically and therapeutically, but will also serve to illustrate the assertions made regarding the lesion.

Case Reports

The first case is that of a white male, about 48 years of age. He was admitted to the hospital with a complaint of abdominal pain. Upon a general physical examination, it was noted that there was some lagging on the right side, but, otherwise, there were no marked physical findings. An x-ray was requested, and it revealed a lesion in the right hilar region, with some atelectasis. The radiologist made a probable diagnosis of primary bronchiogenic carcinoma. Bronchoscopy followed and material was removed for biopsy, which positively established the condition as carcinomatous. In this instance there were no indications of the disease which would have prompted the patient to apply for aid until the condition was too advanced. He died shortly after admission to the hospital.

The second case is that of a colored male, 49 years old, who complained of coughing of six months' duration, with dull aching sensations in the chest. The cough was productive, but there had been no hemoptysis. The patient complained vaguely of a "fever in his stomach." A physical examination of the chest was negative, except for a slight lag on the left side, slightly increased vocal fremitus on the lower left chest, and slight dulness on percussion over the left chest posteriorly. A radiograph made three days later showed some infiltration in the hilar zone of the left lower lobe, suggestive of pneumonia or possibly bronchiectasis with pulmonary shrinkage. A bronchoscopy was then done and a lesion was noted in the left bronchus. A section was removed for biopsy, from which it was reported that upon dipping down from one surface, which was covered with a thin layer of stratified epithelium, there were a number of masses of embryonal epithelial cells occurring in irregular shaped groups, infiltrating through the entire area removed. It was declared definitely carcinomatous in character. A rib resection and a lobectomy were performed one month later. The patient died two days after operation, due to the shock of the operative procedure.

The third case is obviously one in which medical care was requested when it was too late to do anything for him. The patient was first seen complaining of pain in the right chest, and loss of appetite since a "cold" three months previous. The diagnosis at this time was encapsulated pleural effusion of the lower right chest with possibility of tumor. Five hundred c.c. of fluid were removed from the pleural cavity, and the patient was discharged from the hospital after four days. His second admission to the hospital was one

month later, when he again complained of chest pain, with shortness of breath, increasing weakness, and continued loss of weight. The patient died one month after this of bronchiogenic carcinoma. The progress in this instance ran true to form. The physical examination of this patient was essentially negative, and in addition to the late complaints already mentioned might be added a poor appetite, and a "bad taste in his mouth." An examination of the chest revealed lagging on the right side posteriorly, diminished fremitus and breath sounds posteriorly from the scapular angle to the base. Anteriorly, no pathology was noted. The first radiographic report mentioned a homogenous increase of density in the lower third of the right lung, obscuring the diaphragm and right heart border. A lateral view showed this density to be triangular and lying in the posterior half of the chest. These findings were concluded to be suggestive of fluid encapsulated between the right lung and posterior portion of the right diaphragm. Atelectasis in this region, however, could not be excluded. A second radiograph, taken after aspiration of the right pleural cavity, demonstrated encapsulated effusion in the lower right chest. A radiograph made at the time of the second admission of this patient to the hospital, showed increased density over practically the entire right chest. The mediastinal contents were not displaced. The trachea was retracted to the right. The conclusion reached at this time was that the findings were most likely due to a thickened pleura, plus fluid. The following day, after the aspiration of 800 c.c. of fluid, the radiograph showed hydropneumothorax of the right chest with a small amount of fluid. The lung was collapsed about one-third, and there was an increased density over the right base, possibly due to an atelectatic lower lobe. A third radiograph, taken after bronchoscopy, showed hydropneumothorax in the right chest with fluid at the level of the eighth rib posteriorly. No lipiodol could be seen in the lower right lobe, but was seen in the middle and upper right lobes and the lower left lobe. During bronchoscopy, a specimen was removed for biopsy, and the pathologic report pronounced the condition as bronchiogenic carcinoma, type III, with secondary acute and chronic inflammation.

The fourth and last report is that of a laborer from the country who was admitted to the hospital complaining of a cough, chest pain, malaise, and gradual loss of weight. These symptoms were of several months' duration. The patient stated that he coughed up blood and dyspnea was present. He was admitted to the ward and treatment for tuberculosis was instituted. The patient had no chills or fever in the afternoon, but complained of night sweats at times. He was slightly deaf and had been hoarse for five weeks. His appetite was poor, and he ate all food with discomfort. His physical examination was negative for the most part, and his lungs were found to expand practically equal; there was little difference in fremitus; slight impairment on the left side; breath sounds came through clearly; the sounds were rough over the apices and bases, and particularly the right apices and the left bases. There were no definite rales. Bronchoscopy was performed and three small sections of material were removed for biopsy. These showed a positive carcinoma of the bronchus, suggestive of the squamous type. X-ray reports on this patient showed consolidation of the major portion of the left upper lobe, and adhesions to the left bronchus with marked elevation of the diaphragm. One month later the x-ray revealed a large area of passive congestion and poor ventilation in the left upper lobe, most likely due to stenosis (carcinoma) of the second division bronchus. In the lower portion of the left chest there are definite signs of thickening and adhesions to the diaphragmatic pleura. This is a current case. Because of the large number of adhesions, this is probably not a case for pneumonectomy, but can better be treated by high voltage therapy.

These cases, selected at random, typify the general characteristics of the disease. They were victims, however, of late diagnosis, having presented themselves at a stage where there was little or no hope of instituting either effective or palliative treatment.

Discussion

The facts brought out in reviewing the subject of bronchiogenic carcinoma are not new ones, but they still need repeating, with special emphasis on the early recognition of

this disease and its elimination before it gets a foothold. Early diagnosis is the real need in the treatment of lung cancer, and supersedes all other factors toward a favorable outcome. The rapid strides being made in thoracic surgery make it possible to cure some cases, and a more careful study of the many aspects of the disease as a whole, which in turn results in earlier diagnoses, will certainly provide means of instituting more efficacious therapy in those cases unsuited to radical measures. Bronchoscopy holds an important place in the field of early diagnosis of lung conditions, as it is the only means by which positive proof can be obtained before the final stages of the disease.

Conclusions

1. Early diagnosis, so absolutely essential for a favorable outcome in bronchiogenic carcinoma, is possible only by means of a close cooperation of internist, radiologist, bronchoscopist, clinical pathologist, and thoracic surgeon.

2. Bronchoscopy with biopsy is the only positive means of establishing a final diagnosis.

3. The two methods of treatment, which offer the best hope at present in the control of this dreaded disease, are surgery and radiotherapy, for those cases unsuited to operation.

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A PLEA FOR COOPERATION

To the Editor of
Diseases of the Chest:

Dear Sir and Colleague,

I am sending you enclosed the manifesto which has been voted by the doctor members of the *Balkan Medical Union* at their meeting for the 5th Medical Week at Istanbul. I ask you earnestly to publish it in your publication.

The same manifest is addressed to the medical journals of the whole world with the aim of arousing, if possible, a favorable public opinion for adopting the necessary measures against the dangers to which a civil population will be exposed during a "total war".

With the assurance that this proposition will be warmly received by yourself,

I am sir, Very truly yours,

"Prof. Dr. Akil Moukhtar Ozden"

The President of the Balkan Medical Union.

Resolution

"*The Balkan Medical Union*, in session at Istanbul, for the 5th Medical Week; having taken into consideration the terrible sufferings which a total war will bring upon the civil population of open towns together with the total lack of any adaquate means of protection; and having discovered that even in its restricted form the project of "sanitary towns" has not yet been adopted, and that all efforts made to protect civilians against chemical warfare have till now remained as proposals only, and that even the protocol prohibiting the use of asphyxiating gas has not yet been ratified by all nations; has therefore decided to address itself to doctors of every nation with an appeal to take active measures and to fulfill this professional and humanitarian duty of awakening and stirring public opinion.

The Balkan Medical Union believes that only enlightened international opinion can make plain the imminence of the danger and the proved uselessness, even for the victor, of these terrible atrocities, and can thus lead to effective action.

The immutable truth that *hate breeds only hate, and atrocity breeds vengeance* must be impressed on everyone.

(Signed): Prof. Dr. Bensis; Dr. Scaramanga (Athenes); Dr. Zika Markovic; Prof. Dr. K. Sahovic; Dr. M. Simovic (Beograd); Prof. Dr. Gheorghiu; Dr. Popescu Buzeu (Bucarest); Prof. Dr. Akil Muhtar Ozden; Prof. Sedat Tavat; Prof. Dr. A. Suheyl Unver (Istanbul).

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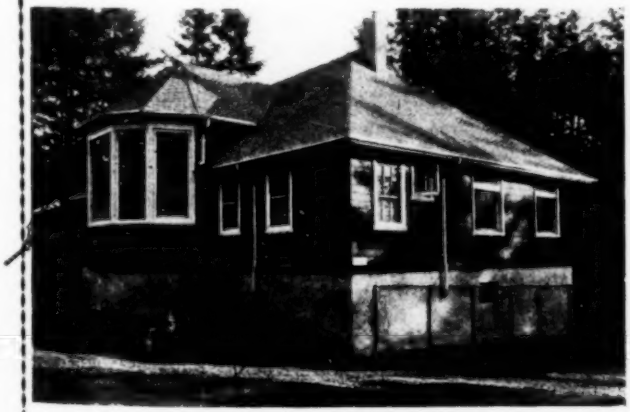

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Organization News

Committee on Medical Schools

Questionnaires were mailed to the Governors of the American College of Chest Physicians by the Committee for the Study of Undergraduate Teaching in Medical Schools, in connection with a survey which the committee is making to ascertain the amount of time and the methods of teaching of lung disease to the medical students in the universities and medical schools.

It is hoped that a preliminary report on the activities of this committee will be presented at the meeting of the American College of Chest Physicians at St. Louis, on May 14th.

Dr. E. W. Hayes, Monrovia, California, Chairman of the Committee for the Study of Undergraduate Teaching in Medical Schools of the American College of Chest Physicians, and past president of the College, attended the meeting of the Committee for Medical School Education of the National Tuberculosis Association at Chicago on February 14th. Dr. Hayes is a member of the Committee for Medical School Education of the National Tuberculosis Association.

Dr. Jas. S. Edlin, New York City, N. Y., a Fellow of the American College of Chest Physicians and a member of the Committee of the College for the Advancement of Scientific Programs on Diseases of the Chest announces that a Clinical Society at the Municipal Sanatorium, Otisville, New York, has been formed to discuss papers on Tuberculosis.

Dr. Warren C. Breidenbach, Dayton, Ohio, a Fellow of the American College of Chest Physicians and a member of the Committee of the College for the Advancement of Scientific Programs on Diseases of the Chest, presented a "Generalized Discussion of Tuberculosis Therapy" before the Muncie Indian Medical Society. Dr. Breidenbach also read a paper on "Planography" (Body Section Radiography) before the staffs of the Good Samaritan Hospital and Miami Valley Hospital at Dayton, Ohio; and he opened the discussion and showed films on this subject before the Radiological Society of America at their annual meeting at Pittsburgh, Pennsylvania. Dr. Breidenbach will read a paper on "Body Section Radiography, with Especial Reference to the Control of Collapse Therapy" at the annual meeting of the American College of Chest Physicians to be held at St. Louis, May 13-14th.

Virginia Reports Tuberculosis Committee

Dr. Dean B. Cole, Governor of the American College of Chest Physicians for the State of Virginia reports that the following physicians have been appointed by Dr. A. F. Robertson, President of the Medical Society of Virginia, to serve as a Tuberculosis Committee for the state medical society:

Dr. Edgar C. Harper, Richmond, Director of the Virginia Department of Health, *Chairman;* Dr. Frank B. Stafford, Charlottesville, First Assistant Physician at Blue Ridge Sanatorium; and Dean B. Cole, Richmond.

Governor for State of Washington Reports

Dr. Frederick Slyfield, Governor of the State of Washington for the American College of Chest Physicians reports that the following physicians have been appointed as members of the Tuberculosis Committee of the Washington State Medical Association:

Dr. John E. Nelson, Seattle, *Chairman*
Dr. Leslie P. Anderson, Elma
Dr. S. L. Cox, Seattle
Dr. Frederick Exner, Seattle
Dr. Ross E. McPhail, Tacoma
Dr. Frank S. Miller, Spokane
Dr. Phillip Schonwald, Seattle
Dr. Robert M. Stith, Seattle
Dr. Leon G. Woodford, Everett.

Dr. Slyfield states, "This committee gives good representation to the state as well as an adequate coverage of the tuberculosis field. Three members are engaged in private practice and sanatorium work. Three are full time Medical Directors of Sanatoria, one of whom does thoracic surgery; and of the remaining three members, one is in private practice, one is doing full time clinic work, and the other member is an outstanding roentgenologist. Six of the nine committeemen are members of the American College of Chest Physicians."

Activities of Tuberculosis Committee in Washington State

Dr. John E. Nelson, Seattle, a Fellow of the American College of Chest Physicians and Chairman of the Tuberculosis Committee of the Washington State Medical Association; gave an illustrated lecture before an assembly of 900 students of the Western Washington

CONTINUED ON PAGE 28.

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E. W. HAYES, M.D., Medical Director

CONTINUED FROM PAGE 26

College of Education at Bellingham, Washington. A similar illustrated lecture was given before a public meeting at Newport, Washington, which was sponsored by the Pend Oreille County Tuberculosis League.

Dr. Leslie P. Anderson, Elma, Washington; read a paper before the Rocky Mountain Tuberculosis Conference at Salt Lake City, Utah. The title of Dr. Anderson's paper was, "The Development of Allergy in Relation to Tuberculous Lesions in Young Adults." Dr. W. P. Penny, Tacoma, President of the Washington Tuberculosis Association also attended this conference.

Dr. Byron F. Francis, Seattle, a Fellow of the American College of Chest Physicians; read a paper on "Emphysema" before the annual meeting of the Washington State Medical Association at Bellingham. The paper was discussed by Dr. Frederick Slyfield, Seattle, Governor of the American College of Chest Physicians for the State of Washington.

Dr. Frederick Slyfield, Seattle, Governor of the American College of Chest Physicians for the State of Washington; read a paper before Health Forum, conducted by the Seattle Federated Woman's Club entitled, "The Comparison of Tuberculosis and Cancer." Dr. Slyfield also gave a lantern slide lecture on tuberculosis to a class of student nurses at the Port Angeles Hospital and spoke before the doctors at dinner given in his honor at the hospital. The title of his paper was, "Special Forms of Treatment in Tuberculosis." Dr. Slyfield contributed an article on "The Fallacy of Climate in Tuberculosis" for publication in the special edition of the Seattle Tomes commemorating the 50th anniversary of the organization of the King County Medical Society, and he addressed a meeting sponsored by the Clallan County Tuberculosis League to launch their annual Christmas Seal Campaign.

Dr. S. L. Cox, Seattle, reports nearly 6000 Mantoux skin tests were given to high school students; and that instructive exhibits and tuberculosis films were shown at various fairs and at the meeting of the Washington State Medical Association. These were sponsored by the Washington Tuberculosis Association.

At the invitation of the Director of the State Department of Health, a group of medical men representing the tuberculosis committee of the Washington State Medical Association, the Washington Tuberculosis Association, and the medical directors of all the sanatoria in the state has been meeting

CONTINUED ON PAGE 30

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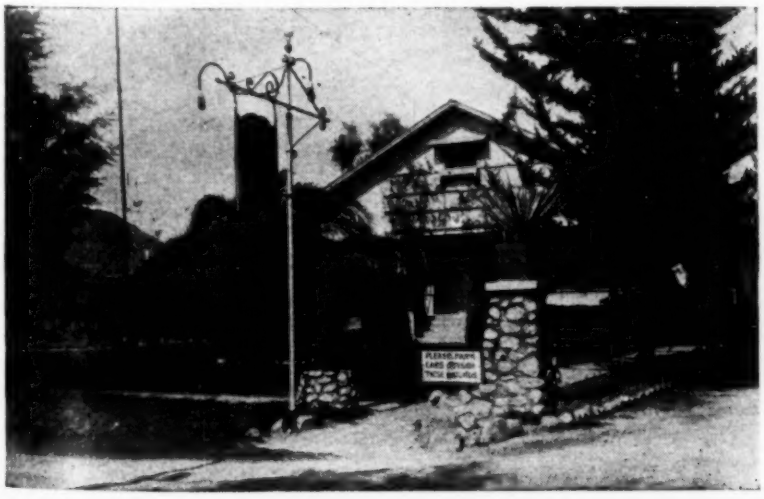

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CONTINUED FROM PAGE 28.

monthly since early fall to discuss and study chiefly the need for additional sanatorium facilities in the state.

New Fellows Elected

The Board of Regents of the American College of Chest Physicians announces that the following physicians have been elected as Fellows of the American College of Chest Physicians since January 1, 1939:

Dr. Sydney Bassin, New York, N. Y.
Dr. Joseph Corsello, Wallum Lake, Rhode Island
Dr. Harold G. Curtis, Cleveland, Ohio
Dr. Paul William Gebauer, Cleveland, Ohio
Dr. Arthur Quito Penta, Schenectady, N. Y.
Dr. John Russell, Des Moines, Iowa
Dr. Charles William Scott, Richmond, Virginia
Dr. Severo Siasoco, Rizal, Philippine Islands.

Dr. Edward J. O'Brien, Detroit, Michigan, Regent of the American College of Chest Physicians was the guest speaker at the meeting of the Jefferson County Medical Society, Louisville, Kentucky, on December 5th. Dr. O'Brien spoke on the "Surgical Treatment of Pulmonary Tuberculosis." The meeting was sponsored by the Louisville Tuberculosis Association.

Dr. Harold G. Trimble, Oakland, California, a Fellow of the American College of Chest Physicians was one of the speakers at a round table discussion on the "Newer Concepts and Procedures in Tuberculosis" given at the meeting of the Alameda County Medical Association on January 16th.

Dr. Edward J. Murray, Lexington, Kentucky, Governor of the American College of Chest Physicians; addressed the annual meeting of the Kentucky Fellows of the American College of Physicians at Lexington on December 19th. Dr. Murray chose as his subject, "Tuberculous and Non-Tuberculous Tracheo-Bronchitis with Mediastinal Glands—A Presentation of Two Cases."

Instruction on Tuberculosis at Tulane

Dr. Julius L. Wilson, associate professor of medicine at Tulane University School of Medicine, New Orleans, a Fellow of the American College of Chest Physicians, is now full time instructor at the school assigned in the field of tuberculosis and other diseases of the chest. State and parish tuberculosis organizations were instrumental in promoting this form of instruction for medical students and Dr. Wilson's services will be available to them for community campaign work. He graduated from Johns Hopkins University School of Medicine, Baltimore, in 1923 and comes to Tulane from the Yale University School of Medicine, New Haven, Conn., where he was assistant clinical professor and in charge of the tuberculosis division of the William Wirt Winchester Hospital. J. A. M. A.

Dr. Andrew L. Banyai, a Fellow and Governor for Wisconsin, of the American College of Chest Physicians spoke on the Diagnosis of Early Pulmonary Tuberculosis before the Dodge County Medical Society at Beaver Dam, Wisconsin, on January 26, 1939. During the Fall of 1938 he gave a talk on Recent Advances in the Treatment of Tuberculosis at the annual meeting of the American Occupational Therapy Association in Chicago; on the Value of Clinical Research in Tuberculosis before the Southern Sanatorium Conference in Louisville, Kentucky; and on Pneumoperitoneum Treatment of Pulmonary Tuberculosis at the annual meeting of the Mississippi Valley Sanatorium Association in St. Louis, Missouri.

Dr. F. M. Pottenger, Monrovia, California, a Fellow of the American College of Chest Physicians will read a paper before the Twenty Third Annual Session of the American College of Physicians to be held at New Orleans, March 27-31st. Dr. Pottenger's paper is entitled, "Living with the Weather," and will be delivered on Thursday Morning, March 30th at 10:30 A. M.

At the annual meeting of the International Post-Graduate Medical Assembly of Southwest Texas, which was held at San Antonio, Texas, January 24-26; the following Fellows of the American College of Chest Physicians appeared on the program as guest speakers: Dr. Ismael Cosio Villegas, Professor of Clinical Medicine at the National University of Mexico and Dr. Jay Arthur Myers, Professor of Preventive Medicine of the University of Minnesota. Dr. Villegas read papers on "Silicosis" and "Extrapleural Pneumothorax," while Dr. Myers gave four lectures before the assembly. He spoke on "The Determination of the Activity of the Tuberculosis Lesion," "Diagnosis and Treatment of Pulmonary Tuberculosis," "The Control of Tuberculosis in a Community," and "The Evolution of Tuberculosis in the Human Body." Dr. Villegas was sponsored by Dr. Joseph Kopecky, and Dr. Myers was sponsored by Dr. Chas. J. Koerth, Medical Superintendent of the Woodmen of the World Memorial Hospital and a Fellow of the American College of Chest Physicians. A dinner was given in honor of Dr. Myers at the sanatorium on January 25th.